



# Installation & Operating Manual

iWAP300



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# 1 Introduction

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The iWAP300 Universal Industrial Access Point Enclosure is designed to deploy wireless networks in harsh, wet and corrosive environments. The concept allows installation of equipment from leading WLAN vendors such as Aeroscout, Meru, Symbol, Cisco, Firetide and many others. Each type of Access Point or RF transmitting device is rigorously checked and tested by Extronics to ensure that the vendors equipment is suited. This means that you can effectively use the vendor of your choice when you want to extend your WLAN to your plant areas where protection against the elements is essential.

The Extronics iWAP300 is designed for use with Extronics extensive range of antennas for optimum coverage. Optional features include surge arrestors for lightening suppression in outdoor installations and multimode fibre inputs for the Ethernet, enclosure heater for low temperature and anti-condensation plus the option of plug and socket cable entry instead of cable glands.

## 2 Safety Information and Notes

### 2.1 Storage of this Manual

Keep this user manual safe and in the vicinity of the device. All persons who have to work on or with the device should be advised on where the manual is stored.

### 2.2 List of Notes

The notes supplied in this chapter provide information on the following.

- **Danger / Warning.**
  - Possible hazard to life or health.
- **Caution**
  - Possible damage to property.
- **Important**
  - Possible damage to enclosure, device or associated equipment.
- **Information**
  - Notes on the optimum use of the device

<b>Warning!</b>	<b>The iWAP300 must not be operated in the hazardous area.</b>
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<b>Important</b>	<b>The technical data indicated on the iWAP enclosure must be observed.</b>
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<b>Important</b>	<b>Changes in the design and modifications to the equipment are not permitted. This includes adding or removing heaters/fans which were installed by Extronics Ltd. Changing the pre installed Access points and/or MESH routers is NOT permitted.</b>
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<b>Important</b>	<b>The iWAP300 shall be operated as intended and only in an undamaged condition.</b>
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<b>Caution</b>	<b>When powering the iWAP300 via POE do not apply an external power supply to the protection board.</b>
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<b>Caution</b>	<b>Never power the iWAP300 (if fans and/or heaters are installed) via POE.</b>
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<b>Important</b>	<b>The nylon washers on the underside of the enclosure lid must be used with the gasket to maintain the IP rating of the enclosure.</b>
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<b>Important</b>	<b>Antennas connections must sealed once installed to prevent the ingress of moisture. Standard RF connector sealing using self amalgamating tape should be used</b>
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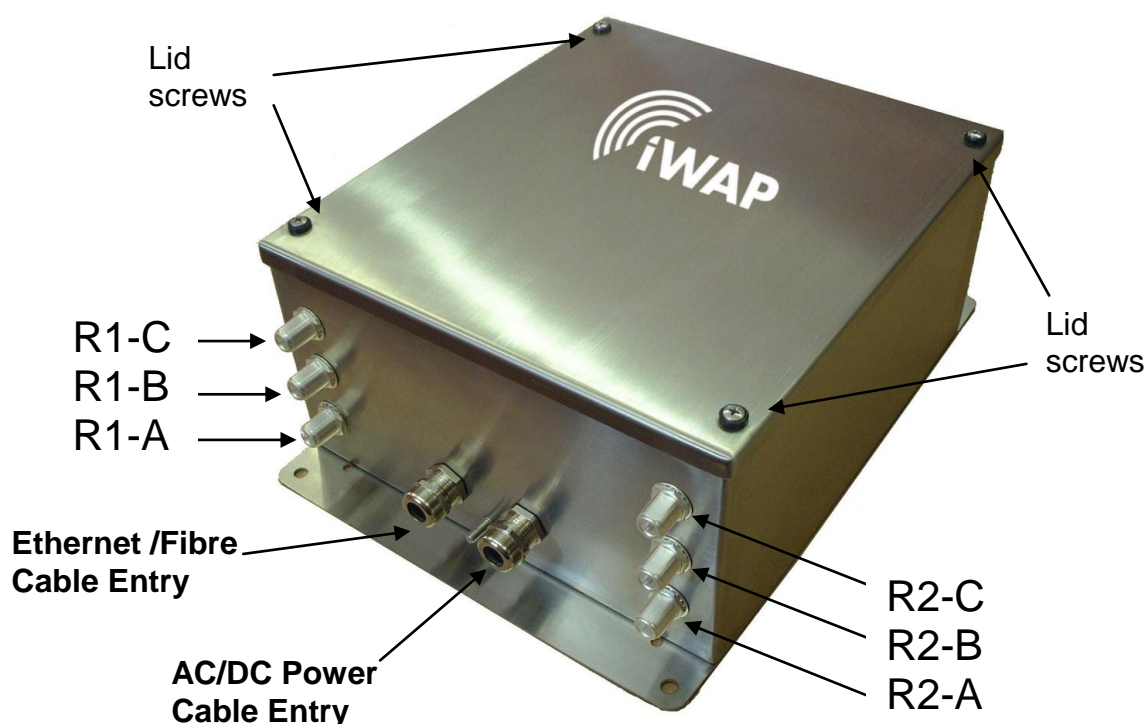
## 3 Installation and Setting-to-Work

### 3.1 Installation

The iWAP300 is simple to install and can be secured directly to suitable surface using the mounting holes on the Enclosure.

#### 3.1.1 Removing the cover

Unscrew the four screws and remove the enclosure lid.



See table below for antenna connections:

Antenna Connection	Number of N-type connectors ordered for Radio 1 (2.4GHz Default)			
	0	1	2	3
R1-A	x	✓	✓	✓
R1-B	x	x	✓	✓
R1-C	x	x	x	✓

Antenna Connection	Number of N-type connectors ordered for Radio 2 (5GHz Default)			
	0	1	2	3
R2-A	x	✓	✓	✓
R2-B	x	x	✓	✓
R2-C	x	x	x	✓

Note: For Radio 1 (R1) and Radio 2 (R2) on any manufacturers Wireless Access point, A will be antenna port 1, B will be antenna port 2, and C will be antenna port 3.

For example:

If you have ordered 1 N-type connector for Radio 1, and 2 N-type connectors for Radio 2. Then R1-A will be connected to antenna port 1 of Radio 1, R2-A will be connected to antenna port 1 of Radio 2, and R2-B will be connected to antenna port 2 of Radio 2 for any manufacturers wireless access point.

### 3.1.2 Fitting the cables

Depending on the configuration of the iWAP300, the connections for power and communication will need to be terminated into the enclosure via the correct cable entries shown in Diagram 3.1.1.

The cables used to connect the power and/or Ethernet connection to the PCB screw terminals must conform to the following specification;

All wires should be stripped and, if stranded cable is used, should be crimped using 2.5mm bootlace ferrules. The stripped/crimped wires should then be placed into the corresponding screw terminal and securely screwed in place.

**If using solid core cable;**

Minimum cross section of cable =  $0.2\text{mm}^2$

Maximum cross section of cable =  $2.5\text{mm}^2$

**If using crimped stranded core cable;**

Minimum cross section of cable =  $0.25\text{mm}^2$

Maximum cross section of cable =  $1.5\text{mm}^2$

**IMPORTANT!** All cables should be connected to the iWAP300 via the correct cable gland, fitted by a competent person.

**IMPORTANT!** Changes in the design and modifications to the equipment are not permitted. This includes adding heaters/fans which are not installed at the factory.

**Important** The installer **MUST** ensure that that all cables have adequate mechanical protection to avoid damage to the wires.

### 3.1.3 Mains & PoE Variant Cable Installation

Diagram 3.1.3.1 shows the connectors on the mains and PoE variant of the iWAP300. Table 3.1.3.2 describes the pin out connection required for operation. There are two blocks of screw terminals and one RJ45 connector. The Ethernet input screw terminals are wired in parallel with the RJ45 connector. Do not make an Ethernet connection to the RJ45 connector and the screw terminals at the same time, the installer should use only one of these connectors.

Follow the instructions in section 3.1.2 to correctly prepare the cables and feed them through the correct cable gland. Follow table 3.1.3.2 to connect the correct cable to the correct screw terminal. If using the RJ45 connector instead of the screw terminals simply connect the Cat-5 cable to the connector and ensure the cable is securely in place.

**Caution** Only ever make one Ethernet cable to either the RJ45 connector or Ethernet screw terminals – **NEVER** both.

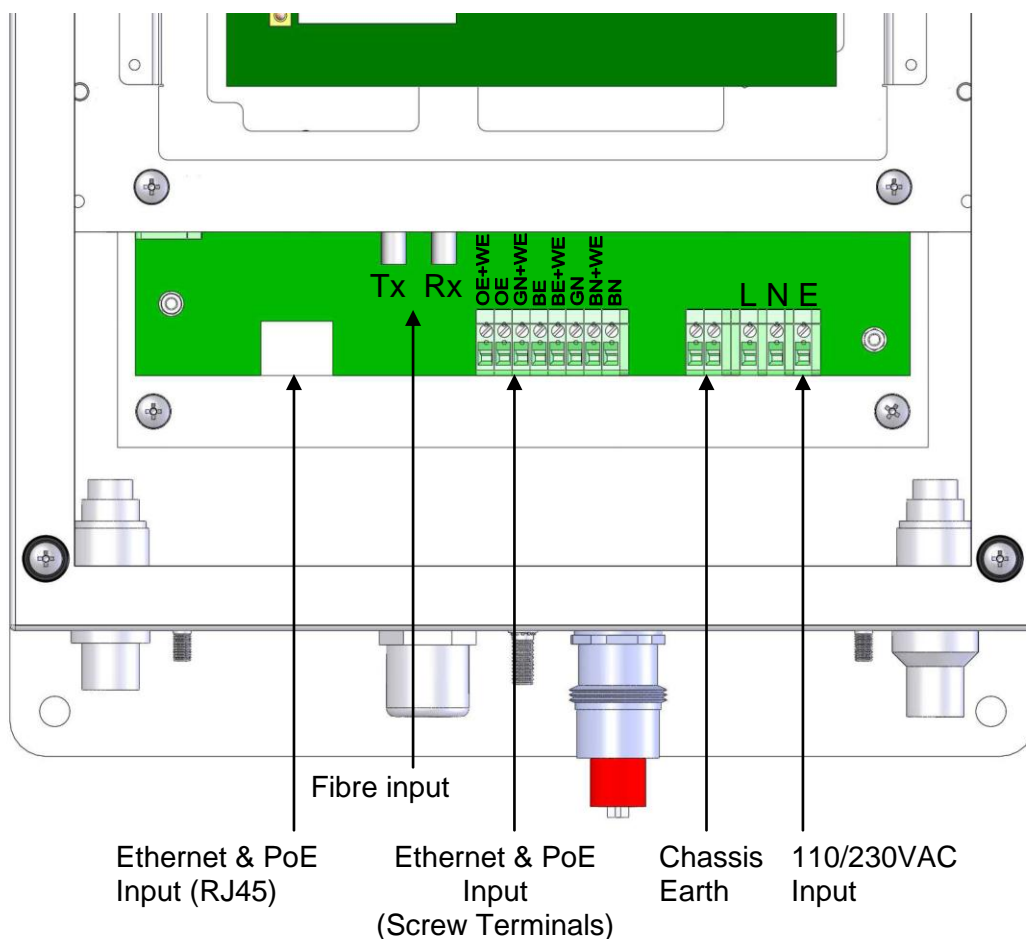


Diagram 3.1.3.1 – Mains Variant & PoE iWAP200 PCB

Connector	Description	Notes
110/230VAC input	These screw terminals allow the connection of a 110/230VAC power supply. Pinouts are; 1 = Live, 2 = Neutral, 3 = Earth. If AC powered, no PoE is required.	<b>Do not apply AC voltage if powering with PoE</b>
Chassis Earth	There are two terminals which allow a connection to earth. When the iWAP300 is delivered one of these terminals will be connected to the enclosure. The second earth terminal spare.	
Ethernet & PoE Input (Terminals)	Connect a Cat-5 cable to these screw terminals for the connection of the Ethernet input. The pinouts on this terminal correspond with the standard cat-5 TIA/EIA-568-B T568B wiring methods.	Only one Ethernet input should be made, only use either the terminals or RJ45 connector <b>NOT</b> both.
Ethernet & PoE Input (RJ45)	This allows the connection of a standard Cat-5 cable with plugs.	Only one Ethernet input should be made, only use either the terminals or RJ45 connector <b>NOT</b> both.
Fibre Input	Allows a fibre connection to be made to the iWAP300 board. The connector will be a ST connector for multimode fibre input, or a SC connector for single mode fibre	The copper Ethernet input is disabled if the fibre module is fitted

Table 3.1.3.2 – iWAP300 Mains / PoE Variant Pinouts



<b>Important</b>	<b>Only connectors 110/230VAC Input, Chassis Earth and Ethernet Input (Terminals or RJ45) are user serviceable. The end user should not connect, disconnect or alter the wiring on any other connector!</b>
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<b>Caution</b>	<b>When powering the iWAP300 via POE do not apply an external power supply to the protection board.</b>
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<b>Caution</b>	<b>Never power the iWAP300 via POE if fans and/ or heaters are installed.</b>
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### 3.1.4 Fibre Ethernet Input

<b>Important</b>	<b>When connecting the access point via a fibre connection do not use any of the two Ethernet inputs of connectors.</b>
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To obtain greater wired link distances the iWAP300 can be shipped with an optional fibre module. The fibre module will be connected directly to the access point, the user should attach the fibre cable directly to the fibre module. The fibre cable should be fed through the Ethernet cable gland.

If a multimode fibre option has been specified the connection is made via a “ST” connector.

If a single mode fibre option has been specified, the connection is made via a “SC” connector.

<b>Important</b>	<b>The fibre cable must enter the iWAP300 enclosure via a cable gland, it therefore may be necessary to terminate the Fibre cable, with the correct connector, from within the enclosure after the cable has been fed through the cable gland.</b>
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### 3.1.5 24VDC Variant Cable Installation

Diagram 3.1.3 shows the connectors on the mains variant of the iWAP300. Table 3.1.3 describes the pin out connection required for operation. There are two blocks of screw terminals and one RJ45 connector. The Ethernet input screw terminals are wired in parallel with the RJ45 connector. Do not make an Ethernet connection to the RJ45 connector and the screw terminals at the same time, the installer should use only one of these connectors.

Follow the instructions in section 3.1.2 to correctly prepare the cables and feed them through the correct cable gland. Follow table 3.1.3 to connect the correct cable to the correct screw terminal. If using the RJ45 connector instead of the screw terminals simply connect the Cat-5 cable to the connector and ensure the cable is securely in place.

<b>Caution</b>	<b>Only ever connect one Ethernet cable to either the RJ45 connector or Ethernet screw terminals.</b>
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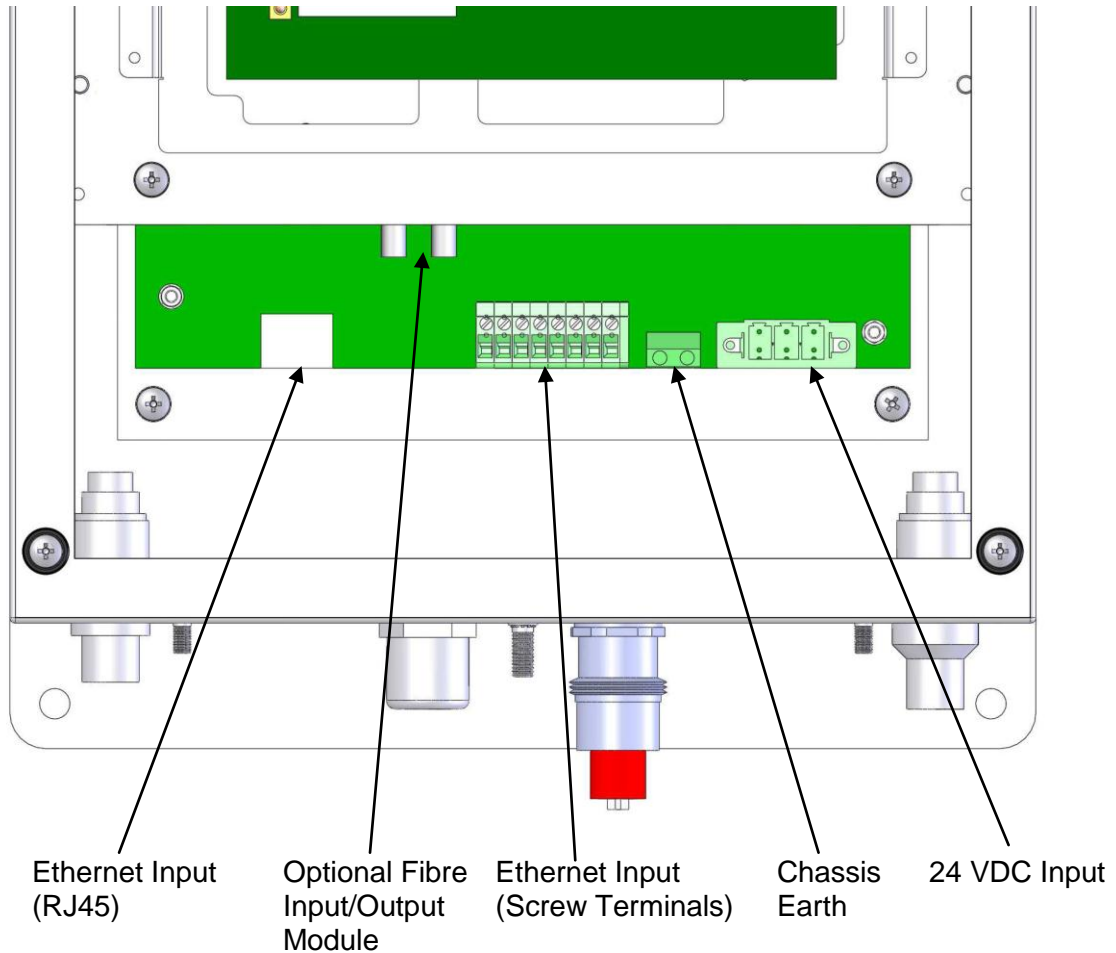


Diagram 3.1.3 – 24V Variant iWAP300 PCB

Connector	Description	Notes
24VDC input	These screw terminals allow the connection of a 24VDC power supply. Pinouts are; 1 = +24V, 2 = 0V/GND, 3 = Earth/cable outer sheath.	
Chassis Earth	There are two terminals which allow a connection to earth. When the iWAP300 is delivered from Extronics' factory one of these terminals will be connected to the enclosure. The second earth terminal spare.	
Ethernet Input (Terminals)	Connect a Cat-5 cable to these screw terminals for the connection of the Ethernet input. The pinouts on this terminal correspond with the standard Cat-5 TIA/EIA-568-B T568B wiring methods.	Only one Ethernet input should be made, only use either the terminals or RJ45 connector <b>NOT</b> both.
Ethernet Input	This allows the connection of a standard Cat-5	Only one Ethernet input

(RJ45)	cable with plugs.	should be made, only use either the terminals or RJ45 connector <b>NOT</b> both.
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Table 3.1.3 – iWAP300 24VDC Variant Pinouts

**Important** Only connectors 24VDC Input, Chassis Earth and Ethernet Input (Terminals or RJ45) are user serviceable. The end user should not connect, disconnect or alter the wiring on any other connector!

**Caution** When powering the iWAP300 via POE do not apply an external power supply to the protection board.

**Caution** Never power the iWAP300 (if fans and/or heaters are installed) via POE.

### 3.1.6 Fibre Ethernet Input

**Important** When connecting the access point via a fibre connection do not use any of the two Ethernet inputs of connectors.

To obtain greater wired link distances the iWAP300 can be shipped with an optional fibre module. The fibre module will be connected directly to the access point, the user should attach the fibre cable directly to the fibre module using a multimode fibre cable on an ST connector.

### 3.1.7 Thermostat Control

The thermostats are currently not user configurable. The default configuration is for the heaters to be turned on when the internal ambient temperature is between -20°C and +10°C and for the fans/wireless hardware to be on above 1.5°C

### 3.1.8 Fitting the Antennas

- Connect the antennas to the correct the N type connector on the outside of the enclosure (see Diagram 3.1.1). Make sure to only connect antennas which are intended to be used at the frequency required (i.e. either 2.4GHz or 5.8GHz antennas).
- Depending on the options ordered some of the N-types may have been replaced with blanking plugs or surge arrestors.
- If the version ordered contains both a mesh router and access point; the mesh router and access point should be setup in software to run at 5.8GHz and 2.4GHz respectively. The iWAP200 will be wired in this way when delivered.

<b>Important</b>	<b>Antennas connections must sealed once installed to prevent the ingress of moisture. Standard RF connector sealing using self amalgamating tape should be used</b>
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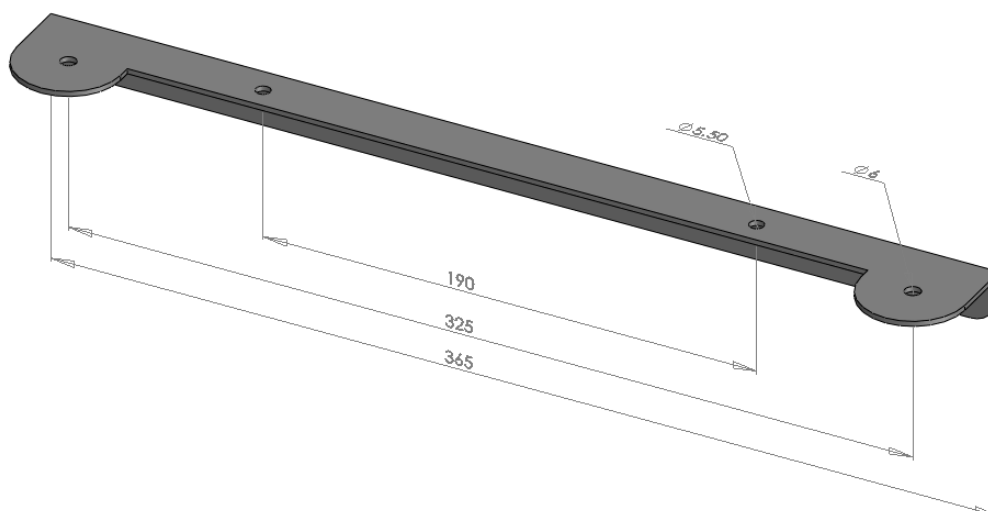
<b>Information</b>	<b>Do not exceed the Effective Isotropic Radiated Power (EIRP) limit for the country/region of operation</b>
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### 3.1.9 Mounting the Antennas

Extronics can supply two sizes of antenna brackets which can be mounted either on the top or bottom of the enclosure. The bracket sizes offered are 365mm and 680mm in length. The brackets allow the mounting of two antennas (either the iANT100 or iANT200) at the far extremities of the bracket.

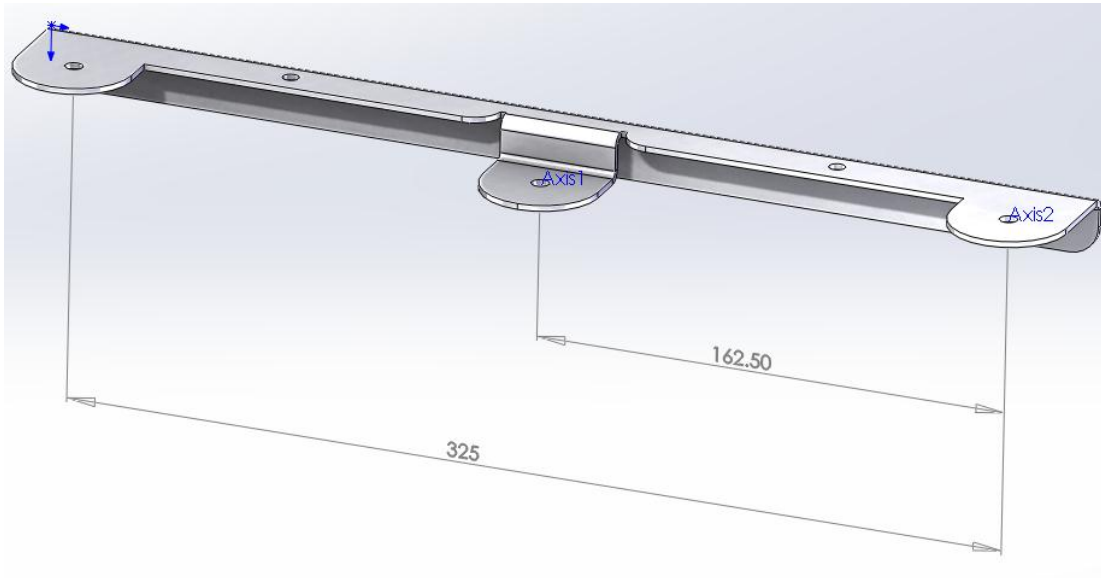
#### 3.1.9.1 iANTMB02

316L SS Antenna bracket 365mm length for 2 iANT100 / iANT200 antennas for mounting on an iWAP enclosure



### 3.1.9.2 iANTMB03

316L SS Antenna bracket 365mm length for 3 iANT100 / iANT200 antennas for mounting on an iWAP enclosure



Bespoke mounting brackets can also be designed for most applications. Please contact Extronics for more information.

### 3.1.10 Setting to work

- Once all cables are connected correctly, refit the enclosure lid using the four screws previously removed. Use a torque screwdriver set to 2.5 Nm. Do not over tighten screws.
- Refer to the original manufacturer's instructions for detailed information on setting the network to work correctly.

<b>Note!</b>	<b>Ensure the lid is secure, correct cable glands are fitted and the unit device correctly wired and earthed for the particular application before applying power</b>
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<b>Note!</b>	<b>Ensure that the lid gasket is clean and undamaged before fitting the lid.</b>
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## 4 Intended Purpose Usage

<b>Important</b>	<b>Before setting the units to work read the technical documentation carefully.</b>
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<b>Important</b>	<b>The latest version of the technical documentation or the corresponding technical supplements is valid in each case.</b>
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The iWAP300 is built using modern components and is extremely reliable in operation; however it must only be used for its intended purpose. Please note that the intended purpose also includes compliance with the instructions issued by the manufacturer for installation, setting up and service.

Any other use is regarded as conflicting with the intended purpose. The manufacturer is not liable for any subsequent damage resulting from such inadmissible use. The user bears the sole risk in such cases.

### 4.1 Transportation and Storage

All iWAP300 devices must be so transported and stored that they are not subjected to any excessive mechanical stresses.

### 4.2 Authorized Persons

Only persons trained for the purpose are authorized to handle the iWAP300; they must be familiar with the unit and must be aware of the regulation and provisions required for correct installation as well as the relevant accident prevention regulations.

### 4.3 Cleaning and Maintenance

The iWAP300 and all its components require no maintenance and are self-monitoring. All work on the iWAP300 by personnel who are not expressly qualified for such activities will cause the guarantee to become void.

### 4.4 Safety Precautions

<b>Important</b>	<b>For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the applicable regulations as well as the Accident Prevention Regulations.</b>
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## **4.5 Cleaning and Maintenance Intervals**

The cleaning intervals depend on the environment where the system is installed.

## **4.6 Aggressive substances and environments**

The iWAP300 is not designed to come into contact with aggressive substances or environments, please be aware that additional protection may be required.

## **4.7 Exposure to external stresses**

The iWAP300 is not designed to be subjected to excessive stresses e.g. vibration, heat, impact. Additional protection is required to protect against these external stresses.

The iWAP300 will require additional protection if it is installed in a location where it may be subjected to damage.

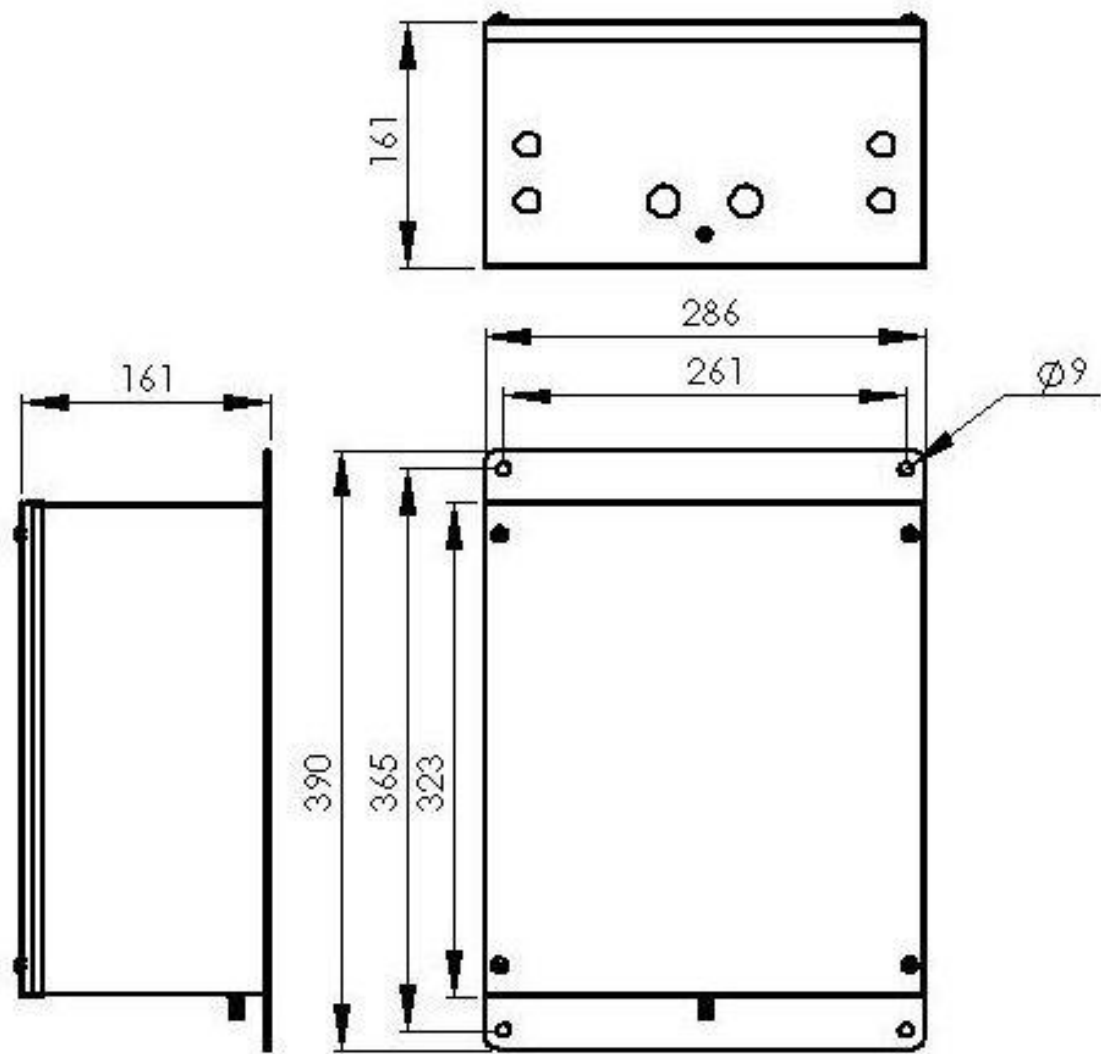
## 5 Technical Data

### 5.1 Specification


Power Supply	Universal 90-264VAC, 20-28VDC or IEEE802.3af POE			
Maximum Power Consumption	Without heating or cooling POE 802.3af or 16W for mains or DC power With cooling 21W With heating and cooling 121W			
Enclosure Material	316L Stainless Steel			
Ingress Protection	IP66			
Weight	Approximately 10 Kg			
Dimensions	390 x 286 x 161 mm (h x w x d)			
Environmental	Typical Operating Temperature (actual temperature range dependant upon access point used, see overleaf): Without heating or cooling –20°C to 50°C With cooling –20°C to 60°C With heating and cooling –40°C to 60°C  Storage temperature; –40°C to 70°C  Relative humidity; 0 to 95%, non condensing  Note: If fibre option chosen the minimum ambient temperature is 0°C. If a lower ambient temperature is required heaters MUST be fitted			
Input Connections	115V/230VAC input option on screw terminals 24VDC input option on screw terminals 10/100BaseT Ethernet on RJ45 socket and screw terminals 10/100BaseFX Multimode fibre input option on ST connectors 100BaseLX-10 Single mode fibre on SC connectors			
Output Connections	Up to 6 external RF outputs via external N-type RF connectors. Surge arrestors are optional. Customer is to specify the number of required RF outputs			
Ethernet Link distance	10/100Base T Ethernet on Cat5e: up to 0.1km 10/100BaseFX on Multimode Fibre: Up to 2km 100Base-LX10 on Single mode fibre: up to 10km			
Maximum Internal RF Cable Loss (between output of access point and external N-type connector)		2.4GHz	5.0Ghz	5.8GHz
	External N-type output	1.2dB	1.40dB	1.60dB
	With Surge Arrestor	1.55dB	1.75dB	1.95dB
Radio	Dependant upon chosen hardware			
Antennas	To be used with up to 6 antennas (not included) e.g. Extronics iANT200 series or any other standard antenna.			



## 5.2 Enclosure Dimensions



### 5.3 EC Declaration of Conformity


Hazardous Area Specialists

**EC Declaration of Conformity**

**Extronics Ltd, 1 Dalton Way, Middlewich, Cheshire, CW10 0HU, UK**

Declare under sole responsibility that the product;

**IWAP300**

*To which this declaration relates is in accordance with the provision of the following directives*

**2004/108/EC** Electromagnetic Compatibility Directive

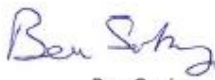
**2006/95/EC** Low Voltage Directive

*And is in conformity with the following standards or other nominative documents*

EN61010-1:2010	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements
EN55022:2006	(+A1:2007) Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
EN55024:1998	(+A2:2003) Information technology equipment - Immunity characteristics - Limits and methods of measurement

**Signed**

**Date : 27/03/2012**



**Ben Seaby**  
Development Manager

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 Incorporated in England and Wales. Registration No.: 3062067

## 6 Type Codes

### iWAP300 Universal Access Point Enclosure

### iWAP300-[#1]-[#2]-[#3]-[#4]-[#5]-[#6]-[#7]-[#8]-[#9]

#### Specify option [#1] - Wireless Network Hardware

Hardware supplied by customer*	C
Hardware supplied by Extronics	E

#### Specify option [#2] - Type Of Wireless Network Hardware

Cisco AP1242 Access Point	(No heating/Cooling: -20°C to 45°C, with heating/cooling -40°C to 55°C)	6
Cisco AP1242 LAP Light Access Point	(No heating/Cooling: -20°C to 45°C, with heating/cooling -40°C to 55°C)	7
Acksys WLG-LINK-OEM	(No heating/Cooling: -20°C to 60°C, with heating/cooling -40°C to 70°C)	26**
Firetide 7000 Series MESH Router	(No heating/Cooling: 0°C to 50°C, with heating/cooling -40°C to 60°C)	30
AeroScout Location Receiver	(No heating/Cooling: 0°C to 50°C, with heating/cooling -40°C to 60°C)	31

\*\* (Note: Acksys WLG-LINK-OEM is NOT currently compatible with an 802.3af POE input. For option #3 only AC or DC input may be chosen)

\*Extronics can supply the above wireless network hardware, alternatively you may wish to "free issue" one of the above solutions so that we can factory fit it. Please note that new hardware not already on the list above will need to be assessed to determine its suitability.

#### Specify option [#3] - Power Supply

Universal 90-264VAC (If heater option [#7] selected, the unit cannot have a universal voltage, it will be either 115VAC or 230VAC)	AC
24V DC	DC
IEEE802.3af compliant Power-Over-Ethernet	POE

Note: If AC option is selected, the unit can be powered by either AC supply or POE supply

#### Specify option [#4] - Ethernet Connection

10/100BaseT Ethernet on CAT5 copper	C
Multimode 10/100BaseFX fibre with ST connector (Note : minimum ambient temperature 0°C without heaters)	F
Single mode 100BaseLX-10 fibre with SC connector (Note: minimum ambient temperature 0°C without heaters)	S

#### Specify option [#5] - Number of Antenna Outputs for Radio 1

0 off N-type connector	0
1 off N-type connector	1
2 off N-type connector	2
3 off N-type connector	3
0 off N-type connector with surge protector	0S
1 off N-type connector with surge protector	1S
2 off N-type connector with surge protector	2S
3 off N-type connector with surge protector	3S

#### Specify option [#6] - Number of Antenna Outputs for Radio 2

0 off N-type connector	0
1 off N-type connector	1
2 off N-type connector	2
3 off N-type connector	3
0 off N-type connector with surge protector	0S
1 off N-type connector with surge protector	1S
2 off N-type connector with surge protector	2S
3 off N-type connector with surge protector	3S

#### Specify option [#7] - Enclosure Heating (not compatible with universal 90-264VAC or POE supplies)

No enclosure heating	N
230VAC enclosure heating	H1
115VAC enclosure heating	H2
24VDC enclosure heating	H3

#### Specify option [#8] - Enclosure cooling (not compatible with POE supply)

No enclosure cooling	N
Enclosure cooling fitted	C

#### Specify option [#9] - Enclosure Cable Entry

Metal compression Cable glands fitted	G
No Glands fitted, M20 entries provided for installer to provide own glands or blanking plugs/sockets	N

#### Accessories

Pipe mount bracket kit to enable the unit to be fixed to a pipe or rectangular post. (2 kits required for complete fitment)	iWAPMB01
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## 7 Warranty Information

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The Customer shall carry out a thorough inspection of the delivered project or equipment with 21 days of delivery and shall give immediate written notification to the Company of any omissions, defects or faults.

The Company warrants that the project or equipment delivered shall accord with the Quotation or Pricing Schedule and related Company specifications, but it does not warrant its fitness for any other purpose.

Extronics will make good, by repair or at Extronics option by the supply of a replacement, defects which, under proper use in accordance with specifications and manufacturer's instructions, appear in the goods within a period of twelve calendar months after the goods have been delivered and arise solely from faulty design, materials or workmanship, provided always that defective parts have been returned to Extronics if Extronics shall have so required.

The warranty of any goods is based upon a return to Extronics factory (Return to Base Warranty) which will be at the Customers cost. The repaired or new parts will be delivered by Extronics carriage paid. If you allege that goods are totally unfit for their purpose they must be returned within 7 days of receipt. Site Warranty is expressly excluded from these terms and conditions unless agreement is made in writing between the parties it.

Extronics liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality or fitness for any particular purpose of the goods, and save as provided in this clause Extronics shall not be under any liability, whether in contract, or otherwise, in respect of defects in goods delivered or for any injury other (than personal injury caused by Extronics negligence as defined in Section 1 of the Unfair Contract Terms Act, 1977), damage or loss resulting from such defects or from any work done in connection therewith, provided however that nothing in this clause shall operate to exclude any warranty or condition implied by law as to the quality of the goods in the event that the goods when sold by you or when sold by any person or persons to whom you may sell the goods shall become the subject of a consumer sale as defined in the Supply of Goods (Implied Terms) Act, 1973 except that any claim under such warranty or condition shall have arisen from any act or omission by you or by any person or persons selling the goods by way of a consumer sale.

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## 8 Manual Revision

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Revision	Description	Date	By
01	Initial Release	15/12/06	DJR
02	Revised To Show Non Wireless Backhaul	23/02/07	NJS
03	New Picture On Front Cover	20/04/07	JE
04	Various changes throughout	13/11/08	JE
05	Updated	30/07/11	NE
06	Added DoC, added MB03 bracket, updated type codes, adding note about sealing RF connections. Added Warranty information	28/03/2012	AJR
07	Added antenna mounting brackets and 6 antenna outputs. Updated AC/POE information	07/03/2013	AJR